



11 7 0237
Hercules Incorporated
Hercules Plaza
1313 North Market Street
Wilmington, DE 19894-0001
(302) 594-5000

May 12, 1997

VIA OVERNIGHT MAIL

Mr. Leo Francendese
On-Scene Coordinator
U.S. EPA Region IV
Atlanta Federal Center
100 Alabama Street
Atlanta, Georgia 30303

RE: **Terry Creek Dredge Spoil Site - Brunswick, GA**

Dear Leo:

Enclosed for your information are the following documents as promised by Dr. Steinberg in the telephone conversation between Hercules and EPA on Thursday, May 8, 1997:

- 1) "Report on Toxaphene Task Force" USEPA Athens, GA., June 4, 1993
- 2) Letter from Marshall Steinberg - Hercules Incorporated to Harold Reheis - GaEPD and Patrick Tobin - USEPA; Re: Analytical Method to Determine Toxaphene Residues in Environment, June 29, 1993
- 3) Letter from Harold Reheis GaEPD to Marshall Steinberg - Hercules Incorporated; Re: Analytical Method to Determine Toxaphene Residues in Environment, July 14, 1993
- 4) "TOXAPHENE. BASIS FOR A CHANGE IN THE CANCER CLASSIFICATION AND FOR A CHANGE IN RECALCULATION OF THE CANCER POTENCY FACTOR", Judith W. Hauswirth, Ph.D. Jellinek Schwartz & Connolly, February 18, 1997

Please call me if you have any questions regarding these documents. Hercules Incorporated extends an immediate offer to meet and discuss the content of any of these documents with the appropriate EPA and EPD personnel.

Sincerely,

Timothy D. Hassett
Hercules Incorporated
Staff Environmental Engineer

TDH:kap
dredge

w/o enclosures

cc: P. Peronard - USEPA
B. J. Hough - 9320 SE
Dr. M. Steinberg - 9281 SW
W. R. Quinn - Brunswick
D. T. Smith - Brunswick
R. Manning - GaEPD



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

ENVIRONMENTAL SERVICES DIVISION
ATHENS, GEORGIA 30613

June 4, 1993

MEMORANDUM

SUBJECT: Report of "Toxaphene Task Force"

FROM: Tom B. Bennett, Jr.
Analytical Support Branch

TO: James H. Finger, Director
Environmental Services Division

Background:

The Toxaphene Task Force is made up Lavon Revells, EPA; Danny Reed, Georgia Environmental Protection Division (GAEPD); Frank Carlin, Hercules; and myself. We met in Athens, GA at the EPA Environmental Services Laboratory on November 15, 1991 to discuss the interpretation of toxaphene chromatograms as produced by gas chromatography/electron capture detector (GC/ECD) methodology. We met as a result of a meeting held at GA EPD on September 30, 1991, and attended by EPA, Law Environmental, and Hercules, Inc. (see Attachment I, Law Environmental inter-office memo).

The group discussed various aspects of toxaphene analysis of environmental samples and concluded its meeting with a proposed plan of action. The plan was a very limited study of toxaphene analysis of real samples collected at the Hercules facility in Brunswick, GA. The study used a standardized procedure, performed by laboratories from EPA, GA EPD, and Hercules, Inc. Details of the study are listed in Attachment II.

The task force met several times (conference and conference calls) to discuss the study plan and procedures, sampling schedule and oversight, and to deliberate on the study results.

Results of Study:

The sampling at the Hercules 009 Landfill site and at the Hercules Plant in Brunswick, GA was conducted under the supervision of Frank Carlin of Hercules and under the oversight of Bill Bokey, Chief of the EPA Hazardous Waste Section.

The three laboratories each analyzed the four split samples collected from Hercules. The sample I.D.'s are listed below:

TOX01---SLUDGE SAMPLE FROM CELL #5 ON THE HERCULES 009
LANDFILL SITE AT BRUNSWICK, GA.

TOX02---SURFACE SOIL FROM THE BENEDICT ROAD ENTRANCE ON THE
HERCULES 009 LANDFILL SITE AT BRUNSWICK, GA.
TOX03---SURFACE SOIL COLLECTED NEAR THE RMT TRAILER ON THE
HERCULES 009 LANDFILL SITE AT BRUNSWICK, GA.
TOX04---GROUNDWATER FROM MONITORING WELL "T-1 DEEP" ON THE
HERCULES PLANT SITE AT BRUNSWICK, GA.

A statistical comparison and summary of the results of the toxaphene analysis of these samples are listed in the attached tables (Tables I, II, and III). All raw analytical data is on file with each of the laboratories. If this data is needed, please contact Mr. Lavon Revells.

Conclusions:

The results of these analysis show that data generated by three laboratories for samples with a wide range of concentrations of toxaphene are comparable using the modification of method 8080 in SW 846, as given in Attachment II. The group's laboratories used samples that had toxaphene concentrations from below the optimum quantitation limit to high levels. If further research was conducted on this method, all samples should contain toxaphene concentrations above the optimum quantitation limit. The following statements summarize the findings of the the Task Force:

1. The results are comparable for both GC columns. (DB-5 and DB-1701; The EPA and Hercules laboratories used megabore, 0.53mm capillary columns; the GAEPD laboratory used a 0.32mm capillary column). The results indicate that the DB-608 and the DB-1 columns may also be used for toxaphene analyses.
2. The chromatographic peaks can be measured from either the base of each peak or from the baseline drawn under all peaks between the extremities of the toxaphene peaks. Caution: The baseline must be drawn under the samples peaks in exactly the same manner as for the toxaphene standard peaks.
3. When the ratios of the peaks in the chromatograms of environmental samples are different from the toxaphene standard (due to environmental degradation or contaminants), special precautions must be taken in calculating and interpreting the results. Peaks selected for quantitation must have the same relative proportions in the sample chromatogram as in the toxaphene standard chromatogram. Any peak which is larger in proportion to the other component peaks in the samples than in the toxaphene standard, should not be used to calculate toxaphene residues in the samples.
4. Samples should be well homogenized in the laboratory prior to preparation.

5. Samples with suspected concentrations of toxaphene higher than 20mg/kg should be screened and must be prepared as a mid-level waste.

6. Laboratories should be aware that toxaphene standards may vary in composition between manufacturers. The group recommends that the standards be purchased from companies that supply EPA- or A2LA- approved standards.

Based on these findings of the study, we conclude that method 8080 as modified, when applied by a chemist who is experienced in gas chromatography pesticide residue analysis, is an appropriate method for determining toxaphene in environmental samples.

If you concur, the Task force will consider its assignment completed.

Attachments

cc: Lavon Revells, EPA, ESD
Danny Reed, GAEPD
Frank Carlin, Hercules 6/10/93
Bill Bokey, EPA, ESD
Bobby Carroll, EPA, ESD
Otis Woods, GAEPD
Leonard Ledbetter, Law Engineering
Jim Patrick, EPA, Water Division
Wade Knight, EPA, ESD

INTER-OFFICE MEMORANDUM

TO: Douglas J. Keilman
Bruce J. Hough

FROM: Edward J. Leonard ~~Director~~

DATE: October 14, 1991

SUBJECT: Meeting with Hercules; U.S. EPA, Region IV, Georgia EPD; and, Law Environmental, Inc.

The persons listed on the attached sheet participated in a meeting at the offices of the Georgia Environmental Protection Division (EPD) on September 30, 1991. The purpose of the meeting was to discuss the subject of Toxaphene and the analytical procedures for Toxaphene when testing environmental samples. In addition, the discussion included the subject of Georgia's water quality standards for Toxaphene. The water quality standard for Toxaphene is below detectable levels.

Currently, the Georgia Water Quality Standards have a limit of 0.45 parts per trillion. Also, the NPDES permit for the Hercules plant in Brunswick, Georgia, limits any water leaving the property to 0.9 parts per trillion.

The discussion related mostly to a review of recent results from several laboratories and the variation in the analytical results from those previously found when Toxaphene was being detected in environmental samples. It was agreed that previously the regulatory agencies and Hercules had used procedure that identified "apparent Toxaphene" when analyzing for environmental samples. The different methods used in analyzing the environmental samples were discussed and it was decided by all parties present that an appropriate procedure would be for representatives from EPA, EPD and Hercules to work together on a task force that would further evaluate the methods/procedures and interpretation of results. Mr. Frank Carlin, with Hercules, will contact Lavonne Revells with the EPA Athens laboratory (404-546-3136) and Mr. Danny Reed (404-656-4860), Georgia EPD, and arrange for the task force to come together to outline the method that will be used for all three groups to analyze environmental samples. The next objective will be, then, how to apply this method to different environmental samples from the environmental media (soil and water). Another objective will be to develop a procedure that will be used by all parties in interpreting the results of the samples when the agreed upon method is used and documented.

Mr. Douglas J. Keilman
Mr. Bruce J. Hough
October 11, 1991
Page 2

It is suggested that within the next ten days to two weeks, Mr. Frank Carlin will arrange the meeting with Lavonne Revells and Danny Reed to begin the discussions to achieve the objectives. It is anticipated that the group can agree upon the goal of accomplishing the outlined objectives by the end of the second quarter of 1992.

Once the work of the task force has been completed, it is proposed that the persons in attendance at the meeting on September 30, again meet to review the work of the task force and to discuss whether the samples do, in fact, reflect Toxaphene, or some other product. It was stated by Mr. David Word that, if the task force and the review committee determines that the product being detected is not Toxaphene, that the Georgia Water Quality Standard would not be applicable. He further stated that it would be necessary, then, to review the bioassay and toxicity studies currently being conducted by Hercules to evaluate any environmental risk detected.

Finally, Mr. Finger and Mr. Woods discussed the subject of the agreed upon laboratory method/procedures being applicable to other environmental sampling and monitoring. Specifically, Mr. Finger emphasized that if all parties agreed upon the method and the findings of the task force, it would be used by EPA for any work related to the Superfund Site or any RCRA matters pertaining to the Hercules facilities involving Toxaphene. Mr. Woods agreed.

Hercules Meeting - 9/30/91

Name

George Stratton
Bruce Hough
Frank Carlin
Leonard Ledbetter
Tim Frazier
John B. Frazier
David L. Linn
Hercules Incorporated
Douglas J. Kellman
Chas. E. Conway
Lawrence W. Hedges

Company

Hercules, Inc.
Hercules Incorporated
Hercules Incorporated
Law Environmental I
US EPA
US EPA
Georgia EPD
Georgia EPD
Hercules Incorporated
Georgia EPD
Georgia EPD

*****ATTACHMENT II*****

FINAL SAMPLING AND ANALYSIS PLAN FOR THE PROPOSED STUDY

The following details represent a consensus of the group which met in conference on February 4, 1992:

I. Analytical Methodology

- A. EPA SW-846 method 8080 will be used for all analysis with some modifications. (GC/ECD)
- B. EPA SW-846 method 3510 will be used for extraction of all water samples. (separatory funnel)
- C. EPA SW-846 method 3550 will be used for extraction of all soil/sediment samples. (sonicator) One modification will be made to 3550: the solvents for soil extractions will be 1:1 hexane/acetone. The EPA laboratory will use one of the following sonicators: Tekmar, Model #TM500 or Heat Systems Ultrasonics, Model # W-375.
- D. All samples will be analyzed in duplicate.

II. Analytical Modifications

- A. Sulfuric acid clean-up will be used on all samples. For soil samples: After the sample extract solvent is exchanged into hexane and concentrated to 5 ml, it is added to 10 ml of concentrated H_2SO_4 in a glass tube with a teflon lined cap. Shake the tube vigorously for 1 minute and allow the phases to separate. If the phases are not clearly separated, centrifuge the mixture. After a clear separation is obtained, transfer the hexane layer to a GC vial for analysis.
- B. GC columns for both initial analysis and confirmation will be megabore columns. The analysis column will be a 30 meter x 0.53mm I.D., DB- 1701 column. The confirmation column will be a 30 meter x 0.53mm I.D. DB-5 column. GA EPD will use wide bore columns (0.32mm I.D.).

*****GC Conditions*****

- 1. Injection Port Temperature=220°C.
- 2. Detector Temperature=350°C.
- 3. Oven Temperature Program=180°C (2 minute hold), to 240°C (10-15 minute hold or until all peaks have eluted), at 6°C per minute.

4. Flow rates:
 - Carrier gas=He (99.999% purity), at 10cc per minute.
 - Make-up gas=95% Argon/5% Methane (99.999% purity), at 20-25cc per minute (or according to instrument specifications).
5. No guard or retention gap column will be used.
6. Off column injection will be used.
7. Injection volume will be either 1 or 2 ul.

C. All analysis will be checked for comparison purposes using a 30 meter x 0.53mm I.D. DB-608 column. GA EPD will use a DB-1 column, 0.32mm I.D.

D. The toxaphene standard should be obtained from Ultra-Scientific, Inc. The catalogue number is CR-6740.

E. Chromatograms will be evaluated two ways; one by drawing the baseline between the extremities of the chromatogram; second by drawing the baseline from valley to valley or following the curvature of the chromatogram.

F. To quantitate the toxaphene, 4-6 major peaks on the "back-half" of the toxaphene chromatogram will be used. Quantitation will be determined by measuring peak height.

G. The QC given in the methods will be followed. The surrogate to use is tetrachloro-meta-xylene. (Can be obtained from Ultra Scientific)

III. Sampling

A. The split sampling effort at the Hercules site in Brunswick, GA, will be implemented by Hercules under the supervision of Frank Carlin. He will establish the sampling dates with his contractor, RMT, for the month of April. Frank will confirm sampling dates ASAP.

B. The study will involve split samples from 3-4 sites, including both water and soil samples. One water sample will be collected from the Hercules discharge ditch, and 2 soil samples will be collected from the 009 landfill. Soil samples will be collected from sites previously sampled and will represent toxaphene concentrations at different levels. In addition Frank will select a soil sample that based on previous analysis has "toxaphene-like-compounds" in it.

C. All sampling will follow EPA sampling protocols as

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outlined and over-viewed by Bill Bokey. Frank will obtain guidance on the split-sampling from Bill Bokey.(404/546-3299). If possible Bill Bokey will have someone on site to overview the sampling. This will be coordinated between Frank and Bill.

IV. Review of Study Results

A. All Analysis will be completed approximately 30 days from the time of sample receipt. All data from the study will be sent to each of the 3 participants. This will include the final results of each analysis. The chromatograms of all samples, blanks, and standards analyzed including the calibration curve and any other check standards analyzed will be held until a final evaluation meeting is scheduled.

B. The data will be summarized by EPA.

C. The summary will be sent to all participants and a meeting to discuss the results will be scheduled by EPA.

6/4/93

TABLE ITOXAPHENE INTERLABORATORY STUDY

<u>LABORATORY</u> <u>STATION</u>	<u>USEPA</u> <u>AVG. RESULTS</u>	<u>%RSD</u>	<u>HERCULES</u> <u>AVG. RESULTS</u>	<u>%RSD</u>	<u>GAEPD</u> <u>AVG. RESULTS</u>	<u>%RSD</u>	<u>INTERLAB</u> <u>%RSD</u>
GC COLUMN DB-1701, PEAK HEIGHT MEASURED FROM BASE OF EACH PEAK							
TOX01 (UG/KG)	2,330,500	53%	2,009,500	27%	2,500,000	28%	13%
TOX01 (LOW LEVEL)	--	--	7,801,000	22%	--	--	--
TOX02 (UG/KG)	107	9.2%	113	36%	76.5	13%	22%
TOX03 (UG/KG)	--	--	87	33%	69	44%	21%
TOX04 (UG/L)	3.3U	--	4.5J	20%	5U	--	--
GC COLUMN DB-5, PEAK HEIGHT MEASURED FROM BASE OF EACH PEAK							
TOX01 (UG/KG)	2,277,000	48%	1,743,500	28%	3,400,000	10%	40%
TOX01 (LOW LEVEL)	--	--	6,439,000	21%	--	--	--
TOX02 (UG/KG)	101	15%	103	1.7%	189	1.9%	40%
TOX03 (UG/KG)	--	--	72.5	1.2%	83.5	2.1%	13%
TOX04 (UG/L)	3.3U	--	2J, 2U	--	5U	--	--
%RSD BETWEEN COLUMNS							
TOX01 (UG/KG)	2,303,750	2.1%	1,876,500	13%	2,950,000	27%	14%
TOX01 (LOW LEVEL)	--	--	7,120,000	17%	--	--	--
TOX02 (UG/KG)	104	5.2%	108	8.2%	133	75%	29%
TOX03 (UG/KG)	--	--	79.8	16%	76	17%	17%
TOX04	-----NO RSD DATA-----						

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TABLE II

TOXAPHENE INTERLABORATORY STUDY

<u>LABORATORY</u> <u>STATION</u>	<u>USEPA</u> <u>AVG. RESULTS</u>	<u>%RSD</u>	<u>HERCULES</u> <u>AVG. RESULTS</u>	<u>%RSD</u>	<u>GAEPD</u> <u>AVG. RESULTS</u>	<u>%RSD</u>	<u>INTERLAB</u> <u>%RSD</u>
GC COLUMN DB-1701, PEAK HEIGHT MEASURED FROM BASELINE							
TOX01 (UG/KG)	2,249,000	52%	2,137,500	20%	2,450,000	25%	8.1%
TOX01(LOW LEVEL)	--	--	7,376,500	21%	--	--	--
TOX02 (UG/KG)	104	4.3%	103	31%	72.5	8.6%	20%
TOX03 (UG/KG)	--	--	86.5	28%	69	44%	20%
TOX04 (UG/L)	3.3U	--	6J	0%	5U	--	--
GC COLUMN DB-5, PEAK HEIGHT MEASURED FROM BASELINE							
TOX01 (UG/KG)	2,992,500	62%	2,067,500	21%	3,550,000	13%	30%
TOX01(LOW LEVEL)	--	--	6,669,000	20%	--	--	--
TOX02 (UG/KG)	102	7.0%	144	12%	200	9.3%	39%
TOX03 (UG/KG)	--	--	95.5	8.4%	83.5	3.2%	12%
TOX04 (UG/L)	3.3U	--	4.5J	--	5U	--	--
%RSD BETWEEN COLUMNS							
TOX01 (UG/KG)	2,620,750	25%	2,102,500	3.0%	3,000,000	33%	20%
TOX01(LOW LEVEL)	--	--	7,022,750	9.0%	--	--	--
TOX02 (UG/KG)	103	2.2%	124	30%	136	83%	38%
TOX03 (UG/KG)	--	--	91	8.8%	76.2	17%	13%
TOX04-----NO RSD DATA-----							

6/4/93

TABLE IIITOXAPHENE INTERLABORATORY STUDY

<u>STATION</u>	<u>BASE OF EACH PEAK</u> <u>AVERAGE RESULTS</u>	<u>BASELINE</u> <u>AVERAGE RESULTS</u>	<u>%RSD</u>
GC COLUMN DB-1701			
TOX01 (UG/KG)	2,280,000	2,278,833	0.046%
TOX01 (LOW LEVEL)	7,801,000	7,376,500	5.0%
TOX02 (UG/KG)	98.8	93.2	5.2%
TOX03 (UG/KG)	78	77.8	0.22%
TOX04 (UG/L)	4.5J	6J	25%
GC COLUMN DB-5			
TOX01 (UG/KG)	2,473,500	2,870,000	13%
TOX01 (LOW LEVEL)	6,439,000	6,669,000	3.1%
TOX02 (UG/KG)	131	149	11%
TOX03 (UG/KG)	78	89.5	12%
TOX04 (UG/L)	2J	4.5J	68%

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June 29, 1993

Harold F. Reheis
Director, Environmental Protection Division
Department of Natural Resources
Floyd Tower East, Suite 1152
205 Butler Street, SE
Atlanta, Georgia 30334

Patrick M. Tobin
Acting Regional Administrator
U.S. Environmental Protection Agency
Region IV
345 Courtland Street, NE
Atlanta, Georgia 30365

**Subject: Analytical Method to Determine
 Toxaphene Residues in the Environment**

Dear Gentlemen:

A meeting among the U.S. EPA, Georgia EPD, Law Environmental, and Hercules Incorporated was held in Atlanta on June 15, 1993. The purpose of the meeting was to discuss how the work of the Toxaphene Task Force would be applied to the qualitative identification and the quantitative determination of toxaphene in environmental samples. For your convenience, a copy of the report of the Toxaphene Task Force (memo from T. Bennett to J. H. Finger dated June 4, 1993) is attached.

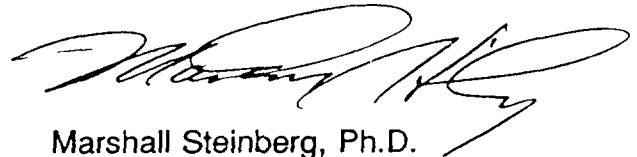
Based on the discussions at the June 15 meeting, it was established that in all future analyses for toxaphene residues the official method of analysis will be EPA Method 8080. For interpretation of the language in Paragraph 7.6.3.1 of the Method, Conclusion 3 of the Toxaphene Task Force report will be used as clarifying language to guide analysts in the qualitative identification of residues as toxaphene and in their quantitative measurement. All gas chromatographic profiles which do not satisfy those criteria will not be regarded as toxaphene, their residues will not be quantified, and the samples will be reported as toxaphene not present.

Harold F. Reheis
Patrick M. Tobin
June 29, 1993
Page Two

We are most appreciative of the opportunity to have the professional laboratory personnel of the Georgia EPD, the U.S. EPA and Hercules work in a scientific manner to resolve this complex matter. This established procedure will enable us to clarify to the Hercules' contract environmental laboratories of the proper laboratory methodology to be used for toxaphene in the future.

Please express our appreciation to your technical personnel for their professional and thorough work on this project.

Sincerely,



Marshall Steinberg, Ph.D.
Vice President
Health & Environment

MS/cep
Attachment
Toxaphne.doc

cc: F. J. Carlin, Hercules, Research Center, Wilmington, DE
W. R. Cunningham, U.S. EPA, Atlanta, GA
J. H. Finger, U.S. EPA, Athens, GA
J. L. Ledbetter, Law Environmental, Kennesaw, GA

June 4, 1993

MEMORANDUM

SUBJECT: Report of "Toxaphene Task Force"

FROM: Tom B. Bennett, Jr.
Analytical Support Branch



TO: James H. Finger, Director
Environmental Services Division

Background:

The Toxaphene Task Force is made up Lavon Revells, EPA; Danny Reed, Georgia Environmental Protection Division (GAEPD); Frank Carlin, Hercules; and myself. We met in Athens, GA at the EPA Environmental Services Laboratory on November 15, 1991 to discuss the interpretation of toxaphene chromatograms as produced by gas chromatography/electron capture detector (GC/ECD) methodology. We met as a result of a meeting held at GA EPD on September 30, 1991, and attended by EPA, Law Environmental, and Hercules, Inc. (see Attachment I, Law Environmental inter-office memo).

The group discussed various aspects of toxaphene analysis of environmental samples and concluded its meeting with a proposed plan of action. The plan was a very limited study of toxaphene analysis of real samples collected at the Hercules facility in Brunswick, GA. The study used a standardized procedure, performed by laboratories from EPA, GA EPD, and Hercules, Inc. Details of the study are listed in Attachment II.

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Results of Study:

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The three laboratories each analyzed the four split samples collected from Hercules. The sample I.D.'s are listed below:

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LANDFILL SITE AT BRUNSWICK, GA.

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TOX02---SURFACE SOIL FROM THE BENEDICT ROAD ENTRANCE ON THE
HERCULES 009 LANDFILL SITE AT BRUNSWICK, GA.
TOX03---SURFACE SOIL COLLECTED NEAR THE RMT TRAILER ON THE
HERCULES 009 LANDFILL SITE AT BRUNSWICK, GA.
TOX04---GROUNDWATER FROM MONITORING WELL "T-1 DEEP" ON THE
HERCULES PLANT SITE AT BRUNSWICK, GA.

A statistical comparison and summary of the results of the toxaphene analysis of these samples are listed in the attached tables (Tables I, II, and III). All raw analytical data is on file with each of the laboratories. If this data is needed, please contact Mr. Lavon Revells.

Conclusions:

The results of these analysis show that data generated by three laboratories for samples with a wide range of concentrations of toxaphene are comparable using the modification of method 8080 in SW 846, as given in Attachment II. The group's laboratories used samples that had toxaphene concentrations from below the optimum quantitation limit to high levels. If further research was conducted on this method, all samples should contain toxaphene concentrations above the optimum quantitation limit. The following statements summarize the findings of the the Task Force:

1. The results are comparable for both GC columns. (DB-5 and DB-1701; The EPA and Hercules laboratories used megabore, 0.53mm capillary columns; the GAEPD laboratory used a 0.32mm capillary column). The results indicate that the DB-608 and the DB-1 columns may also be used for toxaphene analyses.
2. The chromatographic peaks can be measured from either the base of each peak or from the baseline drawn under all peaks between the extremities of the toxaphene peaks. Caution: The baseline must be drawn under the samples peaks in exactly the same manner as for the toxaphene standard peaks.
3. When the ratios of the peaks in the chromatograms of environmental samples are different from the toxaphene standard-(due to environmental degradation or contaminants), special precautions must be taken in calculating and interpreting the results. Peaks selected for quantitation must have the same relative proportions in the sample chromatogram as in the toxaphene standard chromatogram. Any peak which is larger in proportion to the other component peaks in the samples than in the toxaphene standard, should not be used to calculate toxaphene residues in the samples.
4. Samples should be well homogenized in the laboratory prior to preparation.

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5. Samples with suspected concentrations of toxaphene higher than 20mg/kg should be screened and must be prepared as a mid-level waste.

6. Laboratories should be aware that toxaphene standards may vary in composition between manufacturers. The group recommends that the standards be purchased from companies that supply EPA- or A2LA- approved standards.

Based on these findings of the study, we conclude that method 8080 as modified, when applied by a chemist who is experienced in gas chromatography pesticide residue analysis, is an appropriate method for determining toxaphene in environmental samples.

If you concur, the Task force will consider its assignment completed.

Attachments

cc: Lavon Revells, EPA, ESD
Danny Reed, GAEPD
Frank Carlin, Hercules 6/10/93
Bill Bokey, EPA, ESD
Bobby Carroll, EPA, ESD
Otis Woods, GAEPD
Leonard Ledbetter, Law Engineering
Jim Patrick, EPA, Water Division
Wade Knight, EPA, ESD

RECEIVED

JUL 21 1993

July 14, 1993

DR. MARSHALL STEINBERG

Marshall Steinberg, Ph.D.
Vice President
Health & Environment
Hercules Incorporated
Hercules Plaza
Wilmington, DE 19894-0001

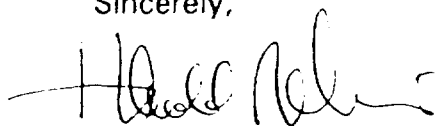
Re: Analytical Method to Determine
Toxaphene Residues in the Environment

Dear Dr. Steinberg:

The Georgia Environmental Protection Division acknowledges receipt of your June 29, 1993 letter concerning conclusions of the Toxaphene Task Force.

We concur that the official method of toxaphene analysis will be EPA Method 8080. Task Force Conclusion 3 will be used in the qualitative identification of residues as toxaphene. This stipulates certain precautions in interpreting what is and what is not toxaphene in examining the chromatograms.

Sincerely,



Harold F. Reheis
Director

HFR:ikk

cc: Kenneth J. Devore